



LAGNIAPPE

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Gilbrech named Distinguished Fellow

Center director honored by MSU College of Engineering

NASA Stennis Space Center Director Dr. Richard J. Gilbrech was honored Feb. 15 by his alma mater, Mississippi State University, with an induction into the institution's Bagley College of Engineering Distinguished Fellows program.

Gilbrech received his bachelor of science degree in aerospace engineering from MSU in 1984. He went on to the California Institute of Technology, earning master's and doctoral degrees in aeronautics with a minor in planetary science. MSU's Distinguished Fellows program recognizes alumni of the Bagley College of Engineering who have made significant contributions to their field.

"I'm honored to be asked to join this distinguished group of



NASA Stennis Space Center Director Dr. Richard Gilbrech (front row, fourth from right) was among 10 Mississippi State University graduates honored by the school's Bagley College of Engineering on Feb. 15. MSU inducted Gilbrech into the college's Distinguished Fellows program.

MSU alumni," Gilbrech said. "My aerospace education at State prepared me well for a challenging graduate program

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Shuttle Manager Wayne Hale briefs SSC employees



NASA's Space Shuttle Program Manager Wayne Hale (right) and Ronnie Rigney, deputy director, SSC's Project Directorate, talk after Hale's meeting with Stennis Space Center program employees. Hale visited SSC on Feb. 5 to update employees on the Space Shuttle Program's accomplishments.

NASA's Space Shuttle Program manager, Wayne Hale Jr., visited Stennis Space Center on Feb. 5 to brief NASA employees and contractors involved in testing the shuttle's main engines.

Hale spoke about the 2006 accomplishments of the Space Shuttle Program and future flights and missions.

"This team does probably the hardest thing done in the country today: fly people safely in space," Hale told the crowd in StenniSphere's auditorium. "My hat is off to you."

Speaking of the program's five projected launches for this year and the heavy launch schedule leading up to 2010, Hale reassured his audience with his belief the Space Shuttle Program would be adequately funded for fiscal year 2008.

"You have a huge job ahead of you.... I think you're going to be very busy here for a number of years."

— *Wayne Hale, manager Space Shuttle Program*

"We have a future," Hale said. "Here at Stennis Space Center, you have a

huge job ahead of you to qualify and upgrade the J-2X engines. I don't see a lot of basic job changes. I can't see any downturning in employment in this area. I think you're going to be very busy here for a number of years."

From the desk of
Dr. Richard Gilbrech
 Director,
 Stennis Space Center



On Feb. 5, NASA Administrator Mike Griffin rolled out the fiscal year 2008 budget for NASA. The President's budget request for NASA is \$17.3 billion, representing a 3.1 percent increase above NASA's FY 2007 budget request.

Like NASA's other nine centers, Stennis Space Center is critical in carrying out NASA's missions of space exploration and scientific discovery. During the budget rollout, Administrator Griffin said NASA's most important resource is its people, and the biggest challenge for the agency is maintaining the technical excellence of NASA's workforce.

The NASA management team has been working on the issues and means to ensure NASA's 10 centers continue to be known for technical greatness. Accordingly, NASA continues to define program management and research roles and responsibilities for each center in carrying out its missions.

Stennis has a key role in NASA's future. Stennis is, as it has been for more than 40 years, NASA's premier rocket propulsion testing site. And we are unique in the nation for testing large rocket engines, including the space shuttle main engine.

Stennis will play a key role in turning the Vision for Space Exploration into a reality. One example is the modifications currently under way on the A-1 Test Stand to accommodate the J-2X engine for the Ares launch vehicle.

The focus of Stennis for FY 2008 is to support the space shuttle and test new rocket engines.

At this time, it would be difficult to make a comparison to FY 2007 because we're still defining the agency's plans for the recently proposed reductions in FY 2007 funding levels.

As Wayne Hale said during his all-hands at Stennis on Feb. 5, NASA is the only government agency, besides the Department of Defense, to receive a budget increase. The future of Stennis remains bright, and I see great things in store for applied sciences and rocket propulsion testing.

Richard J. Gilbrech

Community leaders learn about SSC missions



Port and Harbor Commission

Members of the Hancock County Port and Harbor Commission visit Pratt & Whitney Rocketdyne's RS-68 assembly facility at NASA Stennis Space Center. Scott Walker (left) of Sen. Trent Lott's Gulfport office; Jack Zink, the commission's new director; and Hal Watlers, former commission director, toured the facility and learned about SSC's rocket engine test complex, where the RS-68 and J-2X engines will soon be tested for use in NASA's Constellation Program.



Mississippi Governor's Office on Recovery, Andover Development

Anthony Sones (third from left) of Pratt & Whitney Rocketdyne at Stennis Space Center meets with representatives of the Mississippi Governor's Office on Recovery and of Andover Development who visited the space center Feb. 8. Craig McDonald (from left), Jerry Gardner, Mac McDonald, Ashley Edwards and Bryan McDonald experienced the power of an RS-68 engine test-firing at SSC's B Complex while at SSC.

FULFILLING THE VISION FOR SPACE EXPLORATION

Tests keep launch plan on track

A series of space shuttle main engine tests being conducted on the A-2 Test Stand through the end of February is critical to maintaining the space shuttle flight schedule, according to engineers at NASA Stennis Space Center.

To meet an aggressive test schedule, the NASA-Pratt & Whitney Rocketdyne team added a third eight-hour shift of personnel to work around the clock. SSC must meet this milestone with only one test stand – A-2 – capable of testing space shuttle main engines. The A-1 Test Stand is being converted to test J-2X engines for NASA's Constellation Program.

“Historically, SSC has always stepped up to the plate and met its deadlines,” said SSC Deputy Center Director Gene Goldman, “even when others said it couldn't be done. There's a long history here of people who are completely dedicated and completely focused. They get it done.”

Goldman served as manager and deputy manager of the Space Shuttle Main Engine Project at NASA's Marshall Space Flight Center in Alabama before coming to SSC. His tenure at MSFC gives him a unique perspective on the quality and performance of SSC's work force.

“Our completing this series of tests on time,” Goldman said, “is critical to meeting the needs of the Space Shuttle Main Engine Project to support the shuttle's flight manifest, especially since we only test the SSMEs on one test stand now.”

The series consists of 12 certification tests on a redesigned knife-edge seal within the shuttle engine's high-pressure oxidizer turbo pump (HPOTP). These will be followed by 18 acceptance or “green-run” tests of pumps with redesigned seals. The seals, manufactured by Pratt & Whitney Rocketdyne of Canoga Park, Calif., regulate the coolant for the pump's bearings and turbine blades. Their design is commonly used in gas-powered turbine engines, “but it works differently with cryogenic fuels like liquid hydrogen and liquid oxygen,” said NASA's Don Beckmeyer, space shuttle main engine project manager in the Test Projects Office of SSC's



A test conducted Feb. 12 on SSC's A-2 Test Stand helps engineers certify a seal inside the high-pressure oxidizer turbo pump of a space shuttle main engine. The test is part of a critical series that will help keep the space shuttle's flight schedule on track.

Project Directorate. “These are much more extreme temperatures,” under which parts and materials are expected to behave differently.

The redesigned portions of the nickel alloy seal are minute – fractions of an inch wide and deep. They would seem unimportant to anyone outside the engineering world, but in NASA's human spaceflight program, the safe operation of every tiny piece of hardware is crucial.

The knife-edge seal's teeth needed a makeover. While they didn't breach any safety margins, disassembly inspections uncovered crack-like indications in the teeth of several different seals during routine HPOTP recycle activity. Engineers were concerned the liberated tooth fragments could punch a hole in the main engine's heat exchanger coil, which could have been catastrophic.

Testing the redesigned seals at SSC has shown no problems, no cracks and no undue wear from the vibration of the engine's normal operation. With on-time completion of the current test series, the first engine housing the pump and certified redesigned seal will be ready for installation on NASA's Space Shuttle Atlantis. Its next mission is STS-120, scheduled to launch this September. NASA's space shuttle mission STS-122, scheduled for launch in October, will fly with three engines containing the redesigned seals.

SSC accelerates research results

Prototyping helps put research to work

Scientists at NASA Stennis Space Center are helping extend and accelerate the results of NASA Earth-observation data to contribute to national priority applications with societal benefits.

Scientists and technicians in SSC's Applied

Research and Technology Program Office and the Science and Technology Division have played an integral role in developing, prototyping and implementing the Applied Sciences Program's Rapid Prototyping Capability process. Rapid Prototyping experiments focus on assimilation of NASA Earth Science Division research results to improve decision support systems and move NASA research results into practical application.

Test concepts involve nine new or planned "next generation" Earth science spacecraft. Using a combination of measurements from existing satellite and sensor systems and simulated data sets from planned missions, scientists can test improvements to decision support capabilities. Based on the results of an RPC experiment, researchers can assess the usefulness of a given data set for further analysis with the goal of turning NASA research into operations, ultimately improving decision support tools for federal agency partners.

"What we're really looking for from Rapid Prototyping Capability," said Craig Peterson, RPC project director, "is to be able to conduct quick and cost-effective experiments that result in feasibility studies used to identify and test the most promising operational uses for NASA science results."

SSC scientists began work on the RPC project in 2006. Operational implementation of the rapid prototyping capability began in January.

The initial experiment focuses on monitoring the health of forests and is being conducted in conjunction with Goddard Space Flight Center, the Mississippi Research Consortium,



Craig Peterson (right), RPC project director for NASA's Science and Technology Division at SSC, makes a presentation to the American Geophysical Union's December 2006 meeting in San Francisco. Peterson presented SSC's 2006 efforts to support the Rapid Prototyping Capability system. Robert Moorhead (far left), of Mississippi State University, chaired one of the AGU's sessions on RPC. SSC served as a co-convenor for the RPC session with MSU, Goddard Space Flight Center and George Mason University.

Mississippi State University's Department of Forestry and the University of Maryland, among others. Efforts aim to demonstrate the value of next-generation satellite sensor data in assessing changes to forests, particularly those hit by Hurricane Katrina.

The U.S. Department of Agriculture uses proven satellite data to evaluate America's woodland resources. SSC hopes the experiment will demon-

strate the benefit of adding a new array of satellite data to the USDA arsenal while cutting costs and eliminating duplication.

Remote sensing data gathered by current Earth-observing satellites and sensors like Landsat and MODIS can help identify and measure forest changes such as moisture or chlorophyll content. However, most satellites of that generation are aging, and cannot stay in orbit forever. Federal agencies such as NASA, USDA, the National Oceanographic and Atmospheric Administration, the Department of Defense and others must find a way to fill the gaps as satellites reach the end of their lives.

NASA feels RPC may be the answer. It is a quick way to demonstrate the utility of existing or future data gathered by sensors and satellites.

"RPC is best described as the link between NASA data sets and federal agency needs," said Anne Peek, Lead of SSC's Science and Technology Division. "Through RPC, we can offer agencies additional information for making decisions about topics ranging from monitoring forest health to coastal management issues."

In fact, SSC is set to conduct two RPC experiments after its forest monitoring trial, both designed to test new satellite data and research results for Coastal Management decisions.

All SSC's efforts to build and prove the RPC are directed toward meeting NASA's science and technology goals. The space agency's Applied Sciences Program has identified 12 Earth science applications of national priority. RPC's forestry experiment has relevancy to five.

KSC Director Parsons visits SSC



NASA Kennedy Space Center Director (and former SSC center director) Bill Parsons (fifth from left) and other KSC employees watch an RS-68 engine test at Stennis Space Center's B Test Complex during a visit on Feb. 8. The RS-68 engine will power into orbit the core stage of NASA's future cargo launch spacecraft, Ares V, a centerpiece of NASA's Constellation Program. While at SSC, the group toured the NASA Shared Services Center and received briefings on NSSC's operations. They also toured the A Test Complex, where the A-1 Stand is being converted to test the J-2X engine, which will power the upper stage of Ares I and the Earth departure stage of Ares V.

Pearl River County's future leaders tour SSC



Pearl River County's Partners in Leadership

Members of the 2007 class of Partners in Leadership toured NASA Stennis Space Center and its B Test Stand on Jan. 11. The Partners in Leadership program is designed to teach Pearl River County leaders about their county's government, economic development, history, education and arts in a 10-month period. Sponsored by the Partners for Pearl River County, it helps fulfill the mission of the economic and community development agency.



Pam and David Throckmorton

Throckmorton bids farewell

Former SSC Deputy Center Director David Throckmorton was honored at an appreciation reception held at NASA Stennis Space Center on Feb. 8. Throckmorton recently completed a 40-year career with NASA. He joined the staff of SSC in 2003 as deputy center director. Prior to that time, he served as deputy director of the Engineering Directorate at Marshall Space Flight Center.

He began his NASA career at Langley Research Center, eventually serving as a senior research engineer, as assistant head of the Aerothermodynamics Branch and as manager of the Space Transportation Programs Office.

Early in his career, Throckmorton performed extensive hypersonic wind tunnel tests of candidate configurations for the space shuttle orbiter. He made significant contributions to understanding the orbiter's entry aerodynamic heating environment, and was one of NASA's principal interpreters of flight data from the Orbital Flight Test missions of the Space Shuttle Columbia.



The orbiter Atlantis, on top of its transporter, heads for the Vehicle Assembly Building (pictured behind it) after leaving the Orbiter Processing Facility at Kennedy Space Center, Florida. The rollover signals the start of the journey to the launch pad for liftoff on mission STS-117.

Shuttle Atlantis rolls to VAB

NASA's Space Shuttle Atlantis completed a milestone to move it one step closer to a targeted March launch. Drivers moved Atlantis, perched on top of the giant, 76-wheel Crawler-Transporter, from the Orbiter Processing Facility to the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida on Feb. 7.

In the assembly building, technicians attach Atlantis to its propulsion elements, an external fuel tank and twin solid rocket boosters. After that, final preparations begin for flight.

The next milestone for Atlantis is the 3.4-mile trip to Launch Pad 39A in preparation for its 11-day mission, designated STS-117, to continue construction of the International Space Station.

STS-116 crew visits SSC



The astronauts of NASA's STS-116 space shuttle mission visited NASA Stennis Space Center on Jan. 30 to share highlights of their 13-day mission and to thank SSC employees for the reliability of the space shuttle's main engines, which helped propel Space Shuttle Discovery into orbit Dec. 9. Pictured (from left) are STS-116 crewmembers Commander Mark Polansky, Pilot Bill Oefelein, Mission Specialist Robert Curbeam, SSC Center Director Dr. Richard Gilbrech, and Mission Specialists Joan Higginbotham, Nicholas Patrick and Christer Fuglesang.

GILBRECH

Continued from Page 1

at Cal Tech and a rewarding career with NASA. Visiting campus always brings back fond memories of what I consider one of the most enjoyable periods of my life."

From 2003 to 2005, Gilbrech served at Langley Research Center in Virginia, first as principal engineer in the NASA Engineering and Safety Center, then as the center's deputy director.

He became director of Stennis Space Center in January 2006. The position is his second stint at the South Mississippi space center. He began his NASA career at SSC in 1991. In 1995, he was selected as the Stennis National Aerospace Plane project manager responsible for the construction, activation and operation of a facility to test actively-cooled structures. Later in 1995, he was named the X-33 project manager, responsible for converting SSC's A-1 Test Stand from space shuttle main engine testing to testing the linear aerospike engine's turbopump. From 1998 to 2000, he served as chief of SSC's Propulsion Test Engineering Division within the Propulsion Test Directorate.

In 2000, Gilbrech served as technical assistant to the space shuttle program manager at Johnson Space Center in Texas, then returned to SSC as deputy director of propulsion testing.

He was named manager of the Propulsion Integration Office responsible for managing NASA's rocket propulsion test facilities at SSC, Marshall Space Flight Center, Johnson Space Center's White Sands Test Facility and Glenn Research Center's Plumbrook Station.

A Holly Grove, Ark., native, Gilbrech has received numerous honors and awards, including NASA's prestigious Outstanding Leadership and Exceptional Achievement medals. He and his wife, Shelly (also an MSU graduate), live in Picayune, Miss., with their two sons.

Ethical standards require consensus of belief, practice

Editor's Note: *Patricia Johnson of NASA's Office of Diversity and Equal Opportunity at SSC provides this LAGNIAPPE column on topics promoting cross-cultural and interracial understanding.*

It has been recognized that no human institution can exist for very long if its members do not agree on what is right and what is wrong.

The ethics system of moral principles and the methods for applying them provide the tools for making moral judgments by encompassing the language, concepts and models that enable an individual to affect moral decisions.

From the
**Office of
Diversity
and Equal
Opportunity**

It is agreed that there is a need for individual ethical values, organizational policies defining ethical behavior, rewards for ethical behavior and punishment for unethical behavior.

Most businesspeople feel comfortable with the belief that an action that results in the greatest net gain for all parties affected by the action will be considered moral.

Others believe in the entitlements of individuals, and stress that an individual's freedom is not to be violated. This means an action is considered morally right in certain situations if the reason for the action could be used by anyone in a similar situation. We must not use others as a means to our own end by deception, manipulation or exploitation.

Title VII, Diversity and Equal Opportunity, requires that all persons be treated with fairness, equity and impartiality in the distribution of benefits, in the administration of laws and regulations, in the imposition of sanctions and in the retrieval of compensations. An action or policy is considered righteous if it compares favorably with the treatment given to others.

Without some commonly-agreed-upon ethical principles, it is everyone for himself, and trust is undermined.



Former Astronaut and Senator John Glenn (right), NASA Administrator Michael Griffin and others participate in a wreath-laying ceremony as part of NASA's Day of Remembrance on Jan. 29 at Arlington National Cemetery to honor those who lost their lives in space exploration.

Day of Remembrance NASA honors fallen explorers

Editor's Note: *NASA observed its Day of Remembrance on Jan. 29. Below are excerpts from a speech by Administrator Michael Griffin, honoring the agency's fallen astronauts.*

Today, we honor the Apollo 1, Challenger and Columbia astronauts, as well as others at NASA who have given their lives in pursuit of the dream of flight.

The Apollo fire, which occurred 40 years ago on Jan. 27, 1967, was a particular blow, because so few had anticipated that our first tragedy would occur during a ground test. The fire, and the loss of Challenger and Columbia, are stark reminders that we must use our utmost ingenuity to anticipate all of the risks before us.

This Day of Remembrance also reminds us that despite our losses, the American people have never wavered in their support for space exploration. They know that it brings out the best in us, our creativity, our curiosity, our courage in the face of the unknown..... Today, we honor the sacrifice of those who did not yield.

Hail & Farewell

NASA welcomes the following to SSC:

Leana Marshall – Business Management Directorate

Sarah LeBlance – Business Management Directorate

and bids farewell to the following:

David Throckmorton – Office of the Director

Ronald Kent – Office of the Director

Scholarship funds available

The NASA College Scholarship Fund is accepting applications through March 20. The fund awards undergraduate scholarships to NASA dependents pursuing science or engineering studies. Up to six scholarships in the amount of \$2,000 each will be awarded for the 2007-08 school year. The scholarship is renewable for a maximum of \$8,000 over six calendar years.

Applicants must: be dependents of NASA employees, graduate from an accredited high school or be enrolled in college and have a minimum combined 2.5 grade point average.

Applications are available at <http://nasapeople.nasa.gov/nasascholarship/index.htm> or by contacting SSC's education officer, Dewey Herring, at 228-688-3333.

**13,000
saplings
given
away
at SSC**



NASA's Hugh Carr (left) and Ron Magee look over sawtooth oak saplings Feb. 2 at Stennis Space Center's Arbor Day Celebration 2007. Dan Kozar (right) and other members of SSC's Natural Resource Management Team distributed nearly 13,000 free oaks, cypress, mulberry, crabapple and sycamore trees to SSC employees eager to replace those lost or damaged during Hurricane Katrina. First celebrated in Nebraska in 1872, Arbor Day is a tree-planting 'holiday' observed by Mississippi in February to coincide with the best tree-planting weather. This was the third year SSC's Natural Resource Management team has distributed the free trees.

Astro Camp announces 2007 schedule

NASA Stennis Space Center will hold four sessions of its popular daylong Astro Camp Saturday this spring. Hours for the one-day science camps for children ages 7 to 12 are 8:30 a.m. to 4 p.m. "Rocketry 101" will be held Feb. 24 and March 3. "Mission to Mars" will be held March 31 and April 14. Cost for Astro Camp Saturday is \$30 and includes lunch.

"My Place in Space" will be the theme of Astro Camp's seven summer sessions. Each weeklong session will take children ages 7 to 12 on a learning adventure about what it takes to voyage into space. Astro Camp sessions will begin on the following days: June 4, 11, 18 and 25 for children ages 7 to 9; and July 9, 16 and 23 for children ages 10 to 12. Fee for each summer session is \$150 per camper, which includes a camp T-shirt, supplies, snacks and lunch.



Two sessions – beginning June 25 and July 9 – of Astro Camp Plus' "My Place in Space" will be conducted for 13- to 15-year-olds. Fee for each Astro Camp Plus session is \$180 per camper, which includes a camp T-shirt, supplies, snacks and lunch.

To register for any of the 2007 Astro Camp sessions, visit <http://education.ssc.nasa.gov/astrocampschedule.asp>

All Astro Camp missions are held at StenniSphere, SSC's visitor center. Each mission begins at 8:15 a.m. at the Launch Pad, Interstate 10, Exit 2. For more information, call 228-688-7623 or 800-237-1821 (Option 4).

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